WVEPSCOR

BIONANOTECHNOLOGY for Public Security and Environmental Safety

The West Virginia Experimental Program to Stimulate Competitive Research (WVEPSCoR), directed by the Higher Education Policy Commission's Division of Science and Research, has been awarded a $20 million Research Infrastructure Improvement (RII) grant, which began in August 2010 and lasts for five years.

This National Science Foundation (NSF) grant will provide funds for research infrastructure, including new faculty and instrumentation, support for diversity initiatives, workforce development, cyberinfrastructure, education and outreach.

WVEPSCoR partnered with West Virginia University, Marshall University and West Virginia State University in proposing this extensive program.

the science

Bionanotechnology – the intersection of nanotechnology (the study of manipulating matter on an atomic and molecular scale) and biology – focused on applications in public security and environmental safety.

Goals

- Develop a nationally and internationally recognized nanotechnology research center that addresses fundamental science and engineering problems related to environmental health, security and energy.
- Build on expertise developed over the last four years, in the prior RII, in the basic sciences necessary for competing in the burgeoning field of nanotechnology.
- Use this expertise to develop portable devices that use nanotechnology and will be employed for rapid identification of DNA, allow in-field analysis of water for environmental toxins, and be able to study cells as a sensor that will respond to particles and environmental toxins.
- Establish a shared Biotechnology Research Facility that will support biological preparation with on-site analytical characterization; have equipment for microfluidic packaging and microscopic imaging; and have a shared Computational Facility that will add computing resources and provide training to scientists.

education and outreach

- Build upon existing education and outreach programs, such as the Noyce Scholarship Program, and to broaden their impact through graduate education and teacher training.
- Work to diversify the state's research enterprise, both among individuals and institutions.
- Launch extensive communications activities to broaden West Virginians' understanding of science, technology, engineering and mathematics (STEM), and to increase participation in these fields.